ATTACHMENT J.4.55

EXAMPLE OF CONSTRUCTION ACCEPTANCE TEST PLAN

CRU 4

VITRIFICATION PILOT PLANT

CONSTRUCTION ACCEPTANCE TESTING
TURNOVER PACKAGE

FEED PREPARATION I

SYSTEM NO. 270

Control No.

18-CP-0005

Prepared By: S. R. Staehle	
REV	DATE
0	

SIGNATURES

D. NIXON

T. BEASLEY

L. SEXTON

R. HIESTAND

FERMCO Restoration Management Corporation	Title: PUNCHLIST/CONSTRUCTION TURNOVER/FINAL ACCEPTANCE	
	CRU 4 VITRIFICATION PILOT PLANT	
	SYSTEM Nº 270	Control No. 18-PC-0005

CONDITIONAL/FINAL ACCEPTANCE

[ ] CONDITIONAL ACCEPTANCE [ ] FINAL ACCEPTANCE/TURNOVER)	[ ] SUBCONTRACTOR TO CONSTRUCTION [ ] CONSTRUCTION TO FACILITY/SYSTEM OWNER [ ] CONSTRUCTION TO START-UP [ ] CONSTRUCTION TO

PROJECT NO.:	PROJECT TITLE: PILOT PLANT	DATE:

This documents the turnover and acceptance by FERMCO (Construction or Facility/System Owner or Start-up) of equipment and/or systems listed below as being complete in accordance with the established project specification. Upon signature of this document the group accepting the system/facility understands that they are required to perform all duties (lock & tag, maintenance, etc.) associated with being the Facility/System Owner and that all unfinished work listed in the exceptions section will be completed under direction of the receiving group.

DESCRIPTION OF TURNOVER PACKAGE AND/OR ITEM(s):

FEED PREPARATION SYSTEM I
P&ID Nº 94X-5900-N-00270

EXCEPTIONS TO THE ABOVE SCOPE (CONDITIONAL RELEASE):

SIGNATURES REQUIRED

Release of Subcontractor		Release of Construction Division	
RELEASED BY SUBCONTRACTOR:	DATE:	RELEASED BY CONS. DEPT. MANAGER:	DATE:
ACCEPTED BY CDM:	DATE:	ACCEPTED BY START-UP:	DATE:
ACCEPTED BY QIS:	DATE:	ACCEPTED BY FACILITY/SYSTEM OWNER:	DATE:
ACCEPTED BY FACILITY/SYSTEM OWNER:	DATE:		

(CE-004 05/10/94)

FERMCO	CAT TURNOVER PACKAGE CHECKLIST FEED PREPARATION I SYSTEM NO. 270 CONTROL NO. 18-CP-0005	SHEET 1 OF 4 Rev. 0 Date 2/10/95

MECHANICAL EQUIPMENT

EQUIPMENT NO.	DESCRIPTION	INITIALS			
		QC/ CONST	DATE	RSO	DATE
5-TK-29A	Slurry Tank "A"				
5-TK-29B	Slurry Tank "B"				
5-AG-05A	Slurry Tank Agitator "A"				
5-AG-0513	Slurry Tank Agitator "B"				
CAT MECHANICAL PUNCHLIST CLEARED?					

P&ID WALK-THROUGH

94X-5900-N-00270R2	Feed Preparation SHT 1 of 2				
CAT P&ID PUNCHLIST CLEARED?					

ELECTRICAL CHECKLISTS

HEAT TRACING					
CAT ELECTRICAL PUNCHLIST CLEARED?					

EXECUTED BY:
(please print and initial)

_____
SUBCONTRACTOR

_____
OWNER

FERMCO	CAT TURNOVER PACKAGE CHECKLIST FEED PREPARATION I SYSTEM NO. 270 CONTROL NO. 18-CP-0005	SHEET 2 OF 4 Rev. 0 Date 2/10/95

INSTRUMENT INSTALLATION/LOOP CHECKS

				INITIALS			
LOOP NUMBER	DESCRIPTION	INSTALL. OK	LOOP CHK OK?	QC/ CONST	DATE	RSO	DATE
HS-051	Agitator A Controls						
HS-052	Agitator B Controls						
LE-290	Slurry TK A Level						
LSH-290	Slurry TK A Hi Alarm						
LSH-291	Slurry TK B Hi Alarm						
LE-291	Slurry TK B Level						
LSL-290	Slurry TK "A" Lo Level						
WE-291	Slurry TK "B" Lo Level						
WE-292	Slurry TK "A" Load Cell						
FV-290	Slurry TK "A" Flow Control						
FV-291	Slurry TK "B" Flow Control						
FV-292	Slurry Tank "B" Flush						
FIT-290	Slurry Supply Flow Logging						
FV-297	Recycle Water Feed						
FV-298	Slurry TK A Discharge						
FV-299	Slurry TK B Discharge						
FV-296	Sparge Storage TK Flow						

INSTRUMENT/CONTROL SYSTEMS

CAT PUNCHLIST CLEARED?							

FERMCO	CAT TURNOVER PACKAGE CHECKLIST FEED PREPARATION I SYSTEM NO. 270 CONTROL NO. 18-CP-0005	SHEET 3 OF 4 Rev. 0 Date 2/10/95

PIPING INSTALLATION/HYDROTESTS (COMPLETE PRESSURE TEST RECORD FORMS)

					INITIALS			
LINE NUMBER	FROM	TO	INSTALL OK?	HYDRO TEST OK?	QC/ CONST	DATE	RSO	DATE
SL-1 1/2-A-7003 ET	Thickener							
SL-1 1/2-A-7006 ET	SL-1 1/2-A-7003 ET							
SL-1 1/2-A-7019 ET	Slurry Tank Pump							
SL-2 1/2-A-7007 ET	5-TK-29A							
SL-1 1/2-A-7018 ET	Slurry Tank Pump							
SL-1 1/2-A-7008 ET	5-TK-29B							
VE-1 1/2-A-5612	Recycle Water Tank							
VE-1 1/2-A-5614	Vent							
VE-1 1/2-A-5615	Vent							
VE-1 1/2-A-5601	Thickener							
VE-4-A-5600	VE-1 1/2-A-5600							
VE-1 1/2-A-5602	5-TK-29A							
VE-1 1/2-A-5603	5-TK-29B							
RC-1 1/2-7103 ET	Recycle Water							
RC-1-A-7129 ET	RC-1 1/2-A-7103 ET							
RC-1-A-7130 ET	RC-1-7129							
SL-1 1/2-A-7007 ET	SL-2 1/2-A-7007							
SA-8-A1-6403	5-DC-65							
SA 8-A1-6406	4-DC-27							
5A-8-A1-6405	5-DC-65							

PIPING WELD VISUAL/NDT STATUS

CHECKLISTS COMPLETE?								
CAT PIPING PUNCHLIST CLEARED?								

FERMCO	CAT TURNOVER PACKAGE CHECKLIST FEED PREPARATION I SYSTEM NO. 270 CONTROL NO. 18-CP-0005	SHEET 4 OF 4 Rev. 0 Date 2/10/95

MISCELLANEOUS

ITEM	DESCRIPTION	INITIALS			
		QC/ CONST	DATE	RSO	DATE
1	Insulation (Complete checklist)				
2	Painting (Complete checklist)				
MISC. CAT PUNCHLIST CLEARED?					

MECHANICAL EQUIPMENT CHECKLISTS

FERMCO	CAT COMPONENT CHECKLIST	SHOP FABRICATED TANKS

Equipment: SLURRY TANK

Tag No.: 5-TK-29 A

PREREQUISITES	INITIALS S/C	Date	Owner	Date
1. Vendor IOM Manual available and reviewed				
2. Vendor inspection records submitted/available				
3. QC receiving inspection complete				
4. Remove rust preventatives				
5. Remove temporary shipping braces, plugs, etc.				
6. Equipment ID tag attached				
SPECIFIC PROCEDURES				
1. Confirm "Pre-Installation Checklist" complete (see Package 18-PC-0004)				
2. Confirm "Grouting" checklist complete (see Package 18-PC-0005)				
3. Inspect tank interior				
4. Check piping connections, blinds, manholes				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
CAT Punchlist Cleared				

EXECUTED BY:
(please print and initial)

_____ SUBCONTRACTOR

_____ OWNER

FERMCO	CAT COMPONENT CHECKLIST	SHOP FABRICATED TANKS

Equipment: SLURRY TANK

Tag No.: 5-TK-29 B

PREREQUISITES	INITIALS S/C	Date	Owner	Date
1. Vendor IOM Manual available and reviewed				
2. Vendor inspection records submitted/available				
3. QC receiving inspection complete				
4. Remove rust preventatives				
5. Remove temporary shipping braces, plugs, etc.				
6. Equipment ID tag attached				
SPECIFIC PROCEDURES				
1. Confirm "Pre-Installation Checklist" complete (see Package 18-PC-0004)				
2. Confirm "Grouting" checklist complete (see Package 18-PC-0005)				
3. Inspect tank interior				
4. Check piping connections, blinds, manholes				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
CAT Punchlist Cleared				

EXECUTED BY:
(please print and initial)

_____ SUBCONTRACTOR

_____ OWNER

FERMCO	CAT COMPONENT CHECKLIST	AGITATORS

Equipment: SLURRY TANK AGITATOR

Tag No.: 5-AG-05 A

PREREQUISITES	INITIALS S/C	Date	Owner	Date
1. Vendor IOM Manual available and reviewed				
2. Vendor inspection records submitted/available				
3. QC receiving inspection complete				
4. Remove rust preventatives				
5. Remove temporary shipping braces, plugs, etc.				
6. Equipment ID tag attached				
SPECIFIC PROCEDURES				
1. Confirm lubrication				
• Motor				
• Gearbox				
• Packing				
2. Ensure that agitator blades are securely bolted to hub and is secured to shaft.				
3. Ensure that agitator mounting flange is securely bolted to tank flange.				
4. Ensure that gearbox/agitator shaft rigid coupling is securely bolted.				
5. Turn agitator shaft by hand. Adjust packing gland if required.				
6. Inspect electrical connections and jog motor for directional check.				
7. Connect motor/gearbox flex coupling, level the drive and align.				
CAT Punchlist Cleared				

EXECUTED BY:
(please print and initial)

_____ SUBCONTRACTOR

_____ OWNER

FERMCO	CAT COMPONENT CHECKLIST	AGITATORS

Equipment: SLURRY TANK AGITATOR

Tag No.: 5-AG-05 B

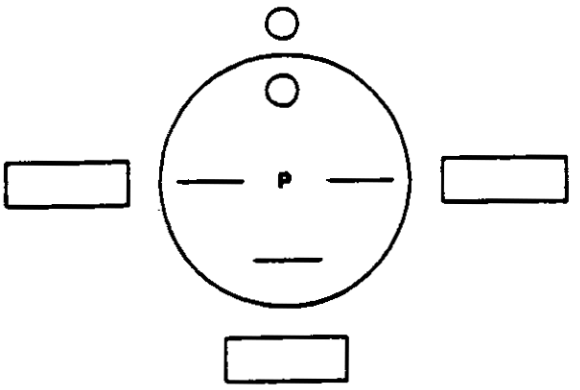
PREREQUISITES	INITIALS S/C	Date	Owner	Date
1. Vendor IOM Manual available and reviewed				
2. Vendor inspection records submitted/available				
3. QC receiving inspection complete				
4. Remove rust preventatives				
5. Remove temporary shipping braces, plugs, etc.				
6. Equipment ID tag attached				
SPECIFIC PROCEDURES				
1. Confirm lubrication				
• Motor				
• Gearbox				
• Packing				
2. Ensure that agitator blades are securely bolted to hub and is secured to shaft.				
3. Ensure that agitator mounting flange is securely bolted to tank flange.				
4. Ensure that gearbox/agitator shaft rigid coupling is securely bolted.				
5. Turn agitator shaft by hand. Adjust packing gland if required.				
6. Inspect electrical connections and jog motor for directional check.				
7. Connect motor/gearbox flex coupling, level the drive and align.				
CAT Punchlist Cleared				

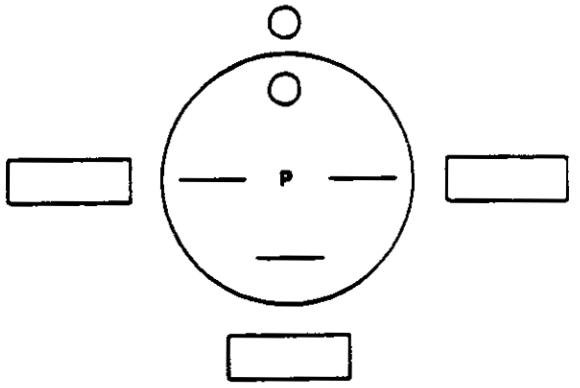
FERMCO

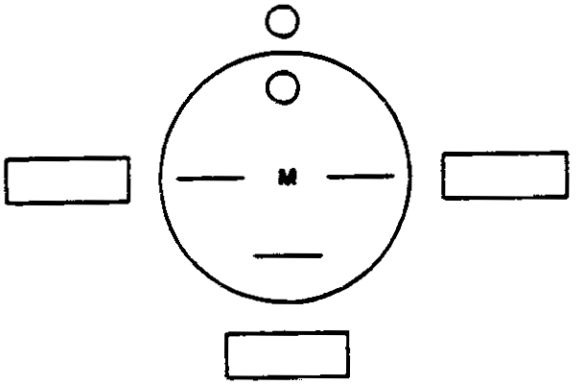
ROTATING EQUIPMENT ALIGNMENT RECORD

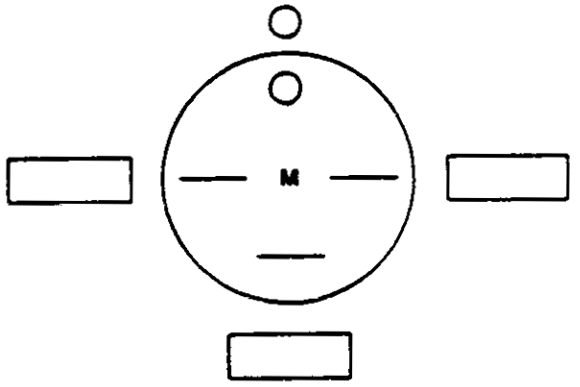
SHEET OF

EQUIPMENT TAG NO: _____









PIPING DISCONNECTED

PIPING CONNECTED

NOTES:

NOMINAL COUPLING GAP: _____

FOR FACE-RIM ALIGNMENT METHOD:
RECORD READINGS ON EITHER DRIVER OR DRIVEN HUB.
USE THE INNER LINES FOR FACE READINGS FOR THAT HUB.

FOR REVERSE ALIGNMENT METHOD:
RECORD THE RIM READINGS ON BOTH DRIVER AND DRIVEN HUBS.

SIGNATURES

SUBCONTRACTOR _____

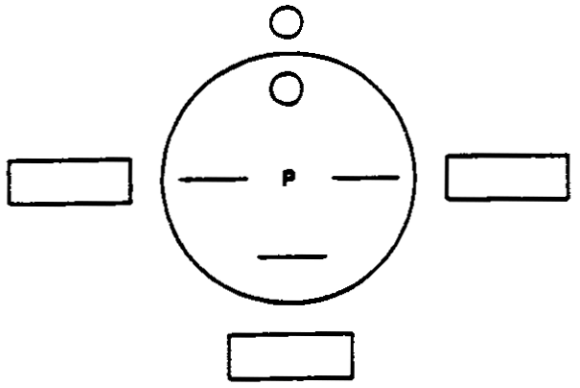
OWNER _____

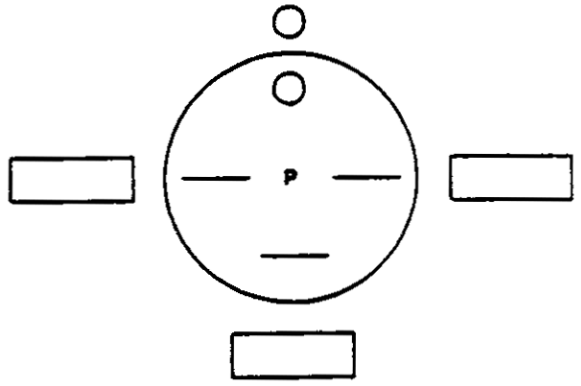
FERMCO

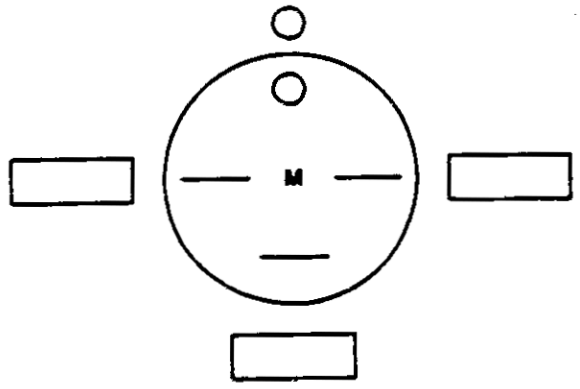
ROTATING EQUIPMENT ALIGNMENT RECORD

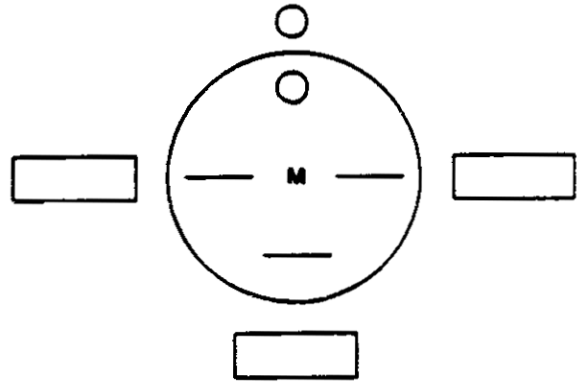
SHEET OF

EQUIPMENT TAG NO: _____









PIPING DISCONNECTED

PIPING CONNECTED

NOTES:

NOMINAL COUPLING GAP: _____

FOR FACE-RIM ALIGNMENT METHOD:
RECORD READINGS ON EITHER DRIVER OR DRIVEN HUB.
USE THE INNER LINES FOR FACE READINGS FOR THAT HUB.

FOR REVERSE ALIGNMENT METHOD:
RECORD THE RIM READINGS ON BOTH DRIVER AND DRIVEN HUBS.

SIGNATURES

SUBCONTRACTOR _____

OWNER _____

PIPING CHECKLISTS

FERMCO	CAT PIPING PRESSURE TEST INSPECTION REFERENCE	SHEET 1 OF 1

TEST PREPARATION:

1. Pressure source and test gauge should be upstream of check valve. If pressure source is down-stream, check valve should have flapper removed or jacked-up. (Pressure must be released down-stream of check valve after test completion.
2. Ensure that test blinds installed are the correct thickness. (A record should be kept showing the location of all test blinds to assure their removal at test completion.)
3. Ensure that all items such as control valves, relief valves, rupture discs, orifice plates, diaphragm instruments, expansion joints, etc., which could be damaged during pressure test have been removed or isolated, as indicated on the pressure test flow diagram.
4. Ensure that equipment, such as filters, which have internals that may be damaged during pressure test are either blocked from test or that internals have been removed.
5. Check all temporary supports that have been called for on the pressure test flow diagrams, piping arrangement drawings or spool drawing to ensure that they have been properly installed.
6. Ensure that equipment, such as compressors, which must not be included in field tests, have been properly blocked off with the casing drain open.
7. Check open and closed position of valves.
8. Check for proper installation of vents and drains.
9. Verify chloride content of test water when testing stainless steels.

TESTING

1. The pressure test gauge shall normally be located at grade near the test pump.
2. Pressure test gauge shall be calibrated once a month to ensure accurate readings. Gauges should be tagged with date last calibrated.
3. Care must be exercised not to exceed pressure test specified on the pressure test data.
4. When conducting a pneumatic test, it is essential that the contract specification for pneumatic testing be adhered to in order to avoid creating a safety hazard.
5. Pneumatic test systems must include double block valves with a bleeder valve between them to safely isolate the pressure source (by closing block valves and opening bleeder to atmosphere) when incremental and final test pressures are attained.

TEST COMPLETION:

1. Care shall be exercised in controlling the rate of draining from vessels in respect to inflow of air through the vent to assure that a vacuum is not applied. **CAUTION:** Prior to commencing drainage, ensure that all vents are open with plugs and blind flanges removed.
2. After drainage, remove all temporary blinds and blanks, temporary supports, and temporary testing connections.
3. Reinstall all items which were removed for test. Ensure that line specification gaskets and bolts are being used when reinstalling these items.
4. Remove all shipping bars from expansion joints.
5. Remove stops from spring hangers and check cold settings.

FERMCO

CAT
ABOVEGROUND PIPE INSPECTION
REFERENCE

SHEET 1 OF 1

GENERAL

- Line size correct.
- Material correct.
- Flange rating correct.
- Stress relieving complete.
- Welding complete.
- Installation straight and plumb.
- Line slopes per drawing
- Branches located correctly.
- Weepholes in reinforcing pad.
- High point vents installed.
- Low point drains installed.
- Reducers located correctly.
- Blinds installed.
- NDE complete (records to be filed, see Section 10).
- Cold spring or pre-spring per drawing
- Clearance for expansion

VALVES

- Flow direction correct.
- Item code number correct.
- Bolts or stud correct.
- Bypass installed (if required).
- Chain wheel installed.
- Extension installed.
- Stem oriented properly.
- Drain, flush, connections installed.

GASKETS AND BOLTS

- Correct type.
- Correct material.
- Correct bolt length.
- Correct gasket thickness.

PIPE SUPPORTS

- Field supports installed.
- Sufficient supports.
- Anchors installed.
- Guides installed.
- Proper shoes installed and welded.
- Spring hangers properly installed.

INSULATION AND TRACING

- Insulation support clips installed.
- Clearances adequate for insulation.
- Electrical tracing installed.
- Steam tracing installed.
- Correct number of tracers.
- Tracer size correct.
- Tracer length correct.
- Trap detail correct.

INSTRUMENTS

- PSVs tested (correct item number).
- Correct control valves installed.
- Meter runs properly installed (jacking screws included).
- Valves at meter runs installed.
- Pressure gauge valves installed.
- Pressure gauges properly oriented.
- Temperature connections properly oriented.
- Sample connections installed.

FERMCO

CAT
UNDERGROUND PIPE INSPECTION
REFERENCE

GENERAL

- Backfill, type and compaction.
- Line size correct.
- Material correct.
- Flange rating correct.
- Stress relieving complete.
- Welding complete.
- Line slopes per drawing
- Branches located correctly.
- High point vents installed.
- Reducers located correctly.
- Reducers type correct.
- Blinds installed.
- NDE complete (records to be filed, see Section 10).
- Bedding
- French drains
- Interior linings

VALVES AND HYDRANTS

- Flow direction correct.
- Item code number correct.
- Bolts or stud correct.
- Bypass installed (if required).
- Extension installed.

GASKETS AND BOLTS

- Correct type.
- Correct material.
- Correct bolt length.
- Caulking type.

PIPE SUPPORTS

- Thrust blocks.
- Sufficient supports.
- Anchors installed.

CATHODIC PROTECTION

- Electrical connections.
- Flange insulating kit.
- Sacrificial material buried.
- Rectification equipment installed.

FERMCO

CAT
PIPING PRESSURE TEST RECORD

SHEET__OF__

SYSTEM/SERVICE _____ TEST PACKAGE NO._____

FLOW DIAGRAM NO._____ SHEET NO.___OF_____

TEST REQUIREMENTS

DESIGN CODE_____ TEST PRESSURE_____

TEST MEDIUM_____ TEST DURATION_____ DESIGN PRESSURE_____

LINE NO.	LINE CLASS	SHEET	ORIGIN	TERMINATION	REMARKS

NDE/PWHT CLEARANCE/DATE _____ TEST PACKAGE APPROVED/DATE _____

TEST INSTRUMENTS

MANUFACTURER	DESCRIPTION	RANGE	ID NO.	DATE OF CALIBRATION

TEST DATA

	TIME	TEST PRESSURE	AMBIENT TEMP.	PIPE TEMP.	REMARKS
START					
FINISH					

PRESSURE TEST SATISFACTORILY COMPLETED SUBCONTRACTOR/DATE _____

OWNER/DATE _____

SITE RESTORATION COMPLETED SUBCONTRACTOR/DATE _____

OWNER/DATE _____

FERMCO

CAT
PIPING PUNCH LIST RECORD

SHEET OF

System No.:

ITEM NO.	DATE ENTERED	IDENTIFICATION AND LOCATION	DATE CORRECTED	SUPERVISOR'S APPROVAL

WELDING CHECKLISTS

FERMCO

CAT
NONDESTRUCTIVE EXAMINATION REQUEST/RECORD

SYSTEM NO.
SHEET OF

YPE EXAMINATION

RADIOGRAPHIC ☐ ULTRASONIC ☐

LIQUID PENETRANT ☐ HARDNESS TESTING ☐

MAGNETIC PARTICLE ☐

EXAMINATION DATA

LINE NO./SPOOL SHEET _____

LOCATION _____

P NO./MATERIAL _____

PIPE SIZE/SCHEDULE _____

ACCEPTANCE CRITERIA (CODE) _____

WELD NO.	WELDER SYMBOL	WELD NO.	WELDER SYMBOL

_____
SITE NDE EXAMINER/DATE

NOTE: THE FOLLOWING IDENTIFICATION SHALL BE PLAINLY AND PERMANENTLY INCLUDED ON THE RADIOGRAPHIC FILM: FCii, CONTRACT NO., LINE NO., WELD NO., WELDER SYMBOL, DATE OF RADIOGRAPHY.

EXECUTED BY:
(please print and initial)

_____ SUBCONTRACTOR

_____ OWNER

FERMCO

WELDER B31.3 RANDOM RT/UT CONTROL LOG

SYSTEM NO.____
SHEET ___ OF ___

CUMULATIVE BUTT WELDS	DATE WELDED	WELD IDENTIFICATION		EXAMINATION DATA				DEFECTS AND DISPOSITION
		DRAWING NUMBER	WELD NUMBER	DATE EXAMINED	ACCEPTED (A)	REJECTED (R)	TWO B31.3 TRACER WELDS SELECTED FOR EACH REJECT	

DEFECTS AND DISPOSITION
SYMBOLS

B31.3 INTERPRETATION DEFECTS

CK	-	Crack
IP	-	Incomplete Penetration
LF	-	Lack of Fusion
UC	-	Undercutting
P	-	Porosity
S	-	Slag
CR	-	Concave Root Surface
EL	-	Elongated Indication

REPAIR INSTRUCTIONS

GO	-	Grind Out, remove area with defect.
GS	-	Grind Surface
CW	-	Cutout Weld, slice in weld plane.
R1	-	First Repair
R2	-	Second Repair

WELDER'S NAME_____

WELDER'S SYMBOL_____

FERMCO

CAT
WELDING NDE/VISUAL STATUS LOG

SYSTEM NO.____
SHEET__OF__

LINE NO. | SHEET NO. | REVISION

WELD NO.	WELDER SYMBOL	DATE WELDED	RT/UT ACCEPT DATE	VISUAL ACCEPT DATE	PWHT DATE	BH DATE	REMARKS

XECUTED BY:

Please print and initial ____________________ Subcontractor ____________________

ELECTRICAL CHECKLISTS

FERMCO

C T

ELECTRICAL HEAT TRACING TEST RECORD

SHEET OF

NOTE: Continuity readings will vary directly with temperature and cable length. Insulation Resistance (megger) readings will vary inversely with temperature and cable length.

REFERENCE DRAWING _____

		(1) UNROLLED, BEFORE INSTALLATION			(2) AFTER INSTALLATION			(3) AFTER INSULATION		
Heater Number	Tag Information	Date of Test	Continuity (OHMS)	*Insulation Resistance (MEGOHMS)	Date of Test	Continuity (OHMS)	*Insulation Resistance (MEGOHMS)	Date of Test	Continuity (OHMS)	*Insulation Resistance (MEGOHMS)

* Minimum acceptable resistance: (1)_____Megohms (2)_____Megohms (3)_____Megohms

Subcontractor/Date:_____

FERMCO

CAT ELECTRICAL PUNCH LIST RECORD

SHEET OF

System No.:

ITEM NO.	DATE ENTERED	IDENTIFICATION AND LOCATION	DATE CORRECTED	SUPERVISOR'S APPROVAL

INSTRUMENTATION CHECKLISTS

FERMCO

CAT
CONTROL SYSTEMS INSTRUMENT INSTALLATION/TESTING INDEX

SYSTEM NO. ___
SHEET ___ OF ___

Tag Number	Function	Type	Location	Flow Diagram	Spec. Sheet	Loop Diagram Number	Installation Sign-Off	Test Press.	Pressure Test Sign-Off	Calibration Sign-Off	Loop Check Sign-Off	Remarks

Type Codes:

E - Electrical
P - Piped
C - Combination (E&P)
D - Direct or Mechanical

Location Codes:

P - Pipe
F - Front of Main Control Panel
B - Back of Main Control Panel
R - Equipment Rack
L - Local Panel
H - Control House

EXECUTED BY:
(please print and initial)

_____ SUBCONTRACTOR

_____ OWNER

FERMCO

CAT
LOOP MECHANICAL COMPLETION AND ACCEPTANCE RECORD

SYSTEM DESCRIPTION _____ SYSTEM NO. _____

INSTRUMENT LOOP TAG NO. _____

LOOP SCHEMATIC DRAWING NO. _____

P&ID DRAWING NO. _____

THIS LOOP _____ IS MECHANICALLY COMPLETE IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS.

DATE _____

SUBCONTRACTOR _____

THIS LOOP _____ HAS BEEN CHECKED WITHIN THE PARAMETERS LISTED ON THE INSTRUMENT LOOP DRAWING, AND/OR MECHANICAL FLOW DIAGRAM, AND IS ACCEPTABLE.

DATE _____

CONSTRUCTION/OWNER _____

FERMCO

CAT INSTRUMENT PRESSURE TEST RECORD

SYSTEM NO. ___
SHEET __ OF __

Flow Diagram ______________________ Test Pressure ______________________

Test Medium ______________________ Test No. ______________________

Instrument No.	Description	Remarks

EXECUTED BY:
(please print and initial)

______________________________ SUBCONTRACTOR

______________________________ OWNER

FERMCO

CAT
PRESSURE SAFETY VALVE TEST RECORD

SYSTEM NO. ___
SHEET __ OF __

Tag No. _____

Specification Sheet No. _____

Purchase Order No. _____ Item No. _____

Serial No. _____

Pressure Setting _____

Leak Test _____

Blowdown _____

This is to certify that the above-noted pressure safety valve has been calibrated to the specified value, as noted on the applicable instrument specification data sheet, and is acceptable.

EXECUTED BY:
(please print and initial)

_____ SUBCONTRACTOR

_____ OWNER

FERMCO

CAT INSTRUMENTATION/CONTROL SYSTEMS PUNCH LIST RECORD

SHEET OF

System No.:

ITEM NO.	DATE ENTERED	IDENTIFICATION AND LOCATION	DATE CORRECTED	SUPERVISOR'S APPROVAL

MISCELLANEOUS CHECKLISTS

FERMCO

CAT
PAINTING INSPECTION REFERENCE

SYSTEM NO. ___
SHEET __ OF __

SURFACE PREPARATION

- Compressed air free of oil and water.
- Weld splatter removed.
- Blasted surface checked against specified SSPC.
- Steel surface laminations removed.
- Weather conditions suitable for blasting.

COATINGS APPLICATION

- Spray equipment conforms to specification requirements.
  - Filter and strainers
  - Brushes
  - Spray tips
  - Rollers
- Spraying techniques in accordance to specifications.
- Weather conditions suitable for painting.
  - Wind
  - Dust
  - Rain
- Wet thickness applied to give minimum dry film thickness.
- Surface, between coats, suitable for subsequent coat.

COATING CONDITION

- Lumps removed.
- Paint thoroughly mixed.
- Proper thinning ratios used.
- Shelf life still valid.
- All containers labeled.
- Colors uniform.

FINISHED SURFACE

- Film thickness as specified.
- Surface integrity.
- Edges and corners properly coated.
- Finish appearance, no drips, runs, sags.
- Coatings inspection record complete.

FERMCO

CAT
PAINTING INSPECTION RECORD

SYSTEM NO. ___
SHEET __ OF __

NOTE: USE ONE SHEET TO DOCUMENT EACH COAT APPLIED IN THE SYSTEM.

Initials/Date

Coating Materials For This Application:

Manufacturer: _____ Technical Data Sheet Approved.

Type: _____ Color: _____

Record label data: paint type, lot, batch, color, instructions.

_____

Surface Preparation:

Metal Surface, in accordance with SSPC VIS-1.

Painted surface, in accordance with manufacturer's recommendations.

Application:

Brush _____ Roller _____ Spray _____

In accordance with manufacturer's recommendations.

Total Dry Film Thickness:

In accordance with SSPC-PA 2, _____ mils.

Workmanship:

Pleasing appearance, no drips, runs, sags or holidays.

Coating Application Location:

Tag, line or structure No. _____

_____.

This is the _____ coat in a coating system of:

_____ Prime Coat(s)
_____ Intermediate Coat(s)
_____ Finish Coat(s)

And a total system thickness of ___ mils.

Sketch of Application Location (if additional clarity is needed):

Remarks: _____

_____

_____

_____

_____

_____

EXECUTED BY:
(please print and initial)

_____ SUBCONTRACTOR

_____ OWNER

FERMCO

CAT
PAINTING PUNCH LIST RECORD

SHEET OF

System No.:

ITEM NO.	DATE ENTERED	IDENTIFICATION AND LOCATION	DATE CORRECTED	SUPERVISOR'S APPROVAL

INSULATION CHECKLISTS

FERMCO	CAT INSULATION INSPECTION REFERENCE	SHEET __ OF __

Materials:

- Material, type as specified
- Thickness, as required
- Fasteners, type as specified
- Joint sealer, as specified
- Vapor barrier, as specified
- Weather proofing, lagging as specified
- Weather proofing, lagging and fasteners, type as specified

Application:

- Joints-staggered (if required) & fit-up
- Joint sealer (if required)
- Insulation fastener spacing as specified
- Vapor barrier (if required)
- Weather proofing, lagging as specified
- Weather proofing, lagging fasteners spacing
- Flanges, valves, supports, etc.
- Insulation support saddles (cold systems) secured and sealed
- Expansion/contraction joints

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CAT
INSULATION CHECKLIST

SHEET OF

N/A - NOT APPLICABLE
OK - SATISFACTORY
X - UNACCEPTABLE

LINE, VESSEL OR EQUIPMENT NO.

I. MATERIALS:			
1. MATERIAL, TYPE AS SPECIFIED.			
2. THICKNESS AS REQUIRED.			
3. FASTENERS, TYPE AS SPECIFIED.			
4. JOINT SEALER AS SPECIFIED.			
5. VAPOR BARRIER AS SPECIFIED.			
6. WEATHERPROOFING, LAGGING AS SPECIFIED.			
7. WEATHERPROOFING, LAGGING AND FASTENERS, TYPE AS SPECIFIED			
II. APPLICATION:			
1. JOINTS - STAGGERED (IF REQUIRED) & FIT-UP.			
2. JOINT SCALER (IF REQUIRED).			
3. INSULATION FASTENER SPACING AS SPECIFIED.			
4. VAPOR BARRIER (IF REQUIRED).			
5. WEATHERPROOFING, LAGGING AS SPECIFIED.			
6. WEATHERPROOFING, LAGGING, FASTENERS SPACING.			
7. FLANGES, VALVES, SUPPORTS, ETC.			
8. INSULATION SUPPORT SADDLES (COLD SYSTEMS) SECURED AND SEALED.			
9. EXPANSION/CONTRACTION JOINTS.			

REMARKS: _____

EXECUTED BY:

SUBCONTRACTOR: _____ DATE: _____

OWNER: _____ DATE: _____

FERMCO

CAT INSULATION PUNCH LIST RECORD

SHEET OF

System No.:

ITEM NO.	DATE ENTERED	IDENTIFICATION AND LOCATION	DATE CORRECTED	SUPERVISOR'S APPROVAL

Construction Acceptance Testing

Notes

GENERAL

Matrix shows minimum requirements. Contractor shall be responsible for ensuring compliance with equipment Manufacturer's precommissioning checkout and testing requirements as outlined in Manufacturer's Installation/Operation Manuals (IOMs), and with Project equipment specifications.

EXPLANATION OF ACTIVITIES

THE FOLLOWING ACTIVITIES SHALL BE PERFORMED SEQUENTIALLY:

A. Inspect/Install Internals

For tanks and vessels, inspect interior for foreign material and for signs of corrosion and/or rust. Remove any rust inhibitors. In addition install any internals requiring field installation (i.e. filter elements, dryer desiccant, baffles, etc.) before closure, ensure internal walls are clean and dry.

B. Check Piping Connections

Ensure proper piping connections to equipment: Screwed connections not cross-threaded; Flanges complete with gaskets, bolted tightly, torqued and not imposing undue stress on equipment flanges. Includes ducting connections. Check to ensure vent and drain valves are installed. Also - ensure required start-up strainers are installed.

C. Confirm Hydro/Leak Tests

All pressure casings and pressure vessels should have been shop hydrotested, confirm hydrotest certificate is available. For tanks and atmospheric vessels, perform leak tests as required. After leak/hydrotesting, ensure interior is dry. Pneumatic tests are also covered in this activity. **(Caution: Never pneumatic test plastic pressure - containing pipe or components).**

D. Flushing & Pickling

Includes flushing, chemical cleaning and mechanical cleaning of piping, vessels, tanks and equipment as required. Some equipment may need to be flushed with a solvent to remove rust inhibitors.

E. Confirm Lubrication

Ensure that reservoirs, constant level oilers, bearing housings, etc., are charged with the proper amount and proper type/grade of lubricant. Ensure that every component that requires lubrication is covered (i.e. driver, driven equipment, couplings, gearboxes, hydraulic fluids in diaphragm metering pumps, fan bearings, diaphragm pump air valves, etc.)

F. Level and Align

Equipment baseplates should be level on their foundations. Check and shim if necessary. Perform cold alignment with piping connected. Tolerances shall be in accordance with Manufacturer's IOMs. Tighten hold-down bolts and apply grouting of bearing surfaces where required.

G. Manually Turn Rotors

The shafts of each component (driver and driven) should be manually turned to check resistance before the motor is "jogged" or "bumped". Shaft should turn freely except that some resistance is expected for pumps with mechanical seals or packed stuffing boxes.

H. Jog Motor

Check for correct motor rotation by "bumping" or "jogging" the **UNCOUPLED** driver. The proper direction is usually indicated by a direction arrow on the driven-equipment casing, bearing housing or discharge head. The rotating element in vertical turbine pumps must be raised axially before start-up. An adjustable pump-to-motor shaft coupling is provided for this purpose, and the pump shaft must be raised per the manufacturer s instructions.

The rotation of submersible units can normally be checked by observation. Check the manufacturer's start-up instructions

If the rotation is incorrect, the electrician should swap two of the 3-phase connections.

I. Connect Coupling/Guards

After rotational check, the coupling (or V-belt drive) should be reassembled and relubricated (if necessary). Turn the coupled shaft by hand again to ensure free movement. Re-attach the coupling guard and bolt securely.

J. Other

These activities are supplemental checks to be performed on specific equipment as detailed in the numerically numbered notes below: